

WHAT IS CLAIMED IS:

- 1 1. A system for control of a golf cart on a golf course, the golf cart having
2 a motor for moving the golf cart, the motor responding to driver commands input
3 through an on board controller, the system comprising:
4 a GPS receiver operable to determine the golf cart position on the golf course;
5 a limited access map defining limited access areas of the golf course; and
6 a limited access controller interfaced with the GPS receiver and the limited
7 access map, the limited access controller operable to override a driver
8 command to move the golf cart to violate a limited access area.
- 1 2. The system of Claim 1 wherein the limited access controller overrides
2 a driver input by governing the maximum speed commanded through the on board
3 controller.
- 1 3. The system of Claim 1 wherein the limited access controller overrides
2 a driver input by preventing a command by the on board controller to the motor that
3 moves the golf cart into the limited access area.
- 1 4. The system of Claim 3 wherein the driver input comprises an
2 accelerator input to advance the golf cart forward along a vector that intercepts a
3 limited access area in a predetermined warning distance and wherein the limited
4 access controller overrides the accelerator input to prevent forward motion along the
5 vector.
- 1 5. The system of Claim 4 wherein the limited access area comprises one
2 or more of a golf green, tee, fairway or hazard.
- 1 6. The system of Claim 1 wherein the limited access area comprises a
2 golf cart path having a turn, the turn having a radius with a predetermined maximum
3 safe speed, the limited access controller commanding the on board controller to
4 override driver inputs to exceed the predetermined maximum safe speed.

1 7. The system of Claim 1 further comprising a driver interface unit
2 operable to present limited access areas to a driver of the golf cart, the driver interface
3 unit further operable to present a message to the driver if the limited access controller
4 commands an override of a driver input.

1 8. The system of Claim 7 wherein the driver interface unit is further
2 operable to send notice to golf course personnel of a driver input to move the golf cart
3 to violate a limited access area.

1 9. The system of Claim 8 wherein the driver interface unit is further
2 operable to accept a notice sent by golf course personnel to disable the limited access
3 controller.

1 10. The system of Claim 1 wherein the limited access controller is further
2 operable to accept a pass code that permits driver inputs to move the golf cart to
3 violate a limited access area.

1 11. A method for controlling golf cart movement on a golf course, the
2 method comprising:
3 monitoring the golf cart position with a GPS receiver;
4 comparing the golf cart position with a limited access map that defines limited
5 access areas of the golf course;
6 determining a golf cart violation of a limited access area;
7 restricting the performance of golf cart driver commands by the golf cart
8 motor to inhibit violation of the limited access area by the golf cart.

1 12. The method of Claim 11 further comprising:
2 presenting at the golf cart a notice to the driver of violation of the limited
3 access area.

1 13. The method of Claim 12 wherein presenting a notice further comprises
2 displaying instructions for avoiding the limited access area.

1 14. The method of Claim 11 wherein determining a golf cart violation of a
2 limited access area further comprises:

3 determining that the golf cart GPS position is within a predetermined distance
4 of the limited access area;
5 estimating the velocity of the golf cart; and
6 analyzing the golf cart position and velocity to project a path for the golf cart
7 through the limited access area.

1 15. The method of Claim 14 wherein estimating the velocity further
2 comprises:

3 polling the golf cart motor to determine the selected motor speed; and
4 analyzing the change in GPS position of the golf cart over time.

1 16. The method of Claim 11 wherein restricting the performance of golf
2 cart driver commands further comprises removing power from the golf cart motor.

1 17. The method of Claim 11 wherein restricting the performance of golf
2 cart driver commands further comprises restricting the maximum speed at which the
3 motor can operate.

1 18. The method of Claim 11 wherein restricting the performance of golf
2 cart driver commands further comprises:

3 disabling golf cart movement towards the limited access area;
4 determining that the golf cart has moved a predetermined distance from the
5 limited access area; and
6 re-enabling the performance of golf cart driver commands.

1 19. The method of Claim 18 wherein disabling golf cart movement
2 towards the limited access area further comprises disabling golf cart movement except
3 in a reverse direction.

1 20. The method of Claim 11 further comprising:
2 displaying an emergency override at the golf cart;

3 selecting the emergency override; and
4 re-enabling the performance of golf cart driver commands to allow golf cart
5 movement through the limited access area.

1 21. A system for control of plural golf carts on a golf course, the system
2 comprising:
3 a GPS receiver associated with each golf cart and operable to determine a GPS
4 position of an associated golf cart;
5 a limited access map associated with each golf cart and defining limited access
6 areas of an associated golf cart;
7 a limited access controller associated with each golf cart and interfaced with
8 the GPS receiver and limited access map, the limited access controller
9 operable to limit the performance of driver commands to move an
10 associated golf cart in a limited access area based at least in part on a
11 GPS position of the associated golf cart;
12 a driver interface unit associated with each golf cart and interfaced with the
13 limited access controller, the driver interface unit operable to
14 communicate with a wireless network; and
15 a base station operable to communicate with the driver interface unit over the
16 wireless network, the base station having an access configuration
17 module operable to define limited access areas and to update one or
18 more of the limited access maps with the defined limited access areas.

1 22. The system of Claim 21 wherein a limited access area comprises a
2 perimeter and a golf cart movement restriction associated with a golf cart position
3 within the perimeter.

1 23. The system of Claim 22 wherein the perimeter is associated with a golf
2 course green and the golf cart movement restriction comprises overriding forward
3 motion by the golf cart onto the green.

1 24. The system of Claim 22 wherein the perimeter is associated with a golf
2 course driving hazard and the restriction comprises overriding driver commands for a
3 speed that exceeds a predetermined maximum speed.

1 25. The system of Claim 22 wherein the perimeter is associated with other
2 golf carts and the restriction comprises governing the maximum golf cart speed.

1 26. The system of Claim 21 wherein the driver interface unit is further
2 operable to communicate to the base station an alarm of a driver command to move a
3 golf cart in a limited access area.

1 27. The system of Claim 26 wherein the base station further comprises an
2 access control module operable to communicate to the driver interface unit an
3 authorization to perform the driver command to move a golf cart in the limited access
4 area.

1 28. The system of Claim 21 wherein the base station further comprises an
2 access control module operable to communicate to one or more selected driver
3 interface units a movement restriction for the golf cart associated with each of the one
4 or more selected driver interface units.

1 29. The system of Claim 28 wherein the base station further comprises an
2 authorization module operable to communicate a request for an authorization code to
3 a driver interface unit and to verify receipt of the authorization code from the driver
4 interface unit, the authorization module commanding the access control module to
5 prohibit movement of the golf cart until receipt of the authorization code.

1 30. The system of Claim 29 wherein the authorization code is associated
2 with payment of a green fee for playing the golf course.

1 31. The system of Claim 21 wherein the access configuration module is
2 further operable to define limited access areas according to golf cart driver type.

1 32. The system of Claim 21 wherein the access configuration module is
2 further operable to restrict golf carts to golf cart paths.

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~~32.~~ The system of Claim 21 wherein the access configuration module is
2 further operable to restrict golf cart movement by one or more predetermined time
3 periods.